

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-44 (canceled).

Claim 45 (currently amended): A method of assaying a sample for an activity that

modifies the rate of joining joins a first substrate with a second substrate to form a product comprising:

- (a) forming a composition comprising said sample, said first substrate and said second substrate;
- (b) incubating said composition under conditions wherein said activity can form said product at a differing rate in the presence or absence of said activity, wherein said activity is not part of the product;
- (c) immobilizing a luminescent label on an electrode, wherein the luminescent label is linked to said product and said product is linked to said electrode, the immobilization being dependent on the formation of product;
- (d) applying a voltage at said electrode so as to induce said immobilized luminescent label to emit luminescence; and
- (e) measuring emitted luminescence so as to measure said activity.

Claim 46 (currently amended): A method of assaying a sample for an activity that

modifies the rate of joining joins a first substrate with a second substrate to form a product comprising:

- (a) forming a composition comprising said sample, said first substrate and said second substrate, said first substrate being linked to a luminescent label and said second substrate being linked to an electrode;
- (b) incubating said composition under conditions wherein said activity can form said product at a differing rate in the presence or absence of said activity, wherein said product is linked to said luminescent label and said electrode and wherein said activity is not part of the product;
- (c) applying a voltage at said electrode so as to induce said luminescent label in said product to emit luminescence; and
- (d) measuring emitted luminescence so as to measure said activity.

Claim 47 (currently amended): The method of claim 46, wherein said second substrate is linked to said electrode via a first binding reagent attached to the second substrate that can specifically bind to a second binding reagent attached to said electrode an A:B linkage.

Claim 48 (previously presented): The method of claim 46, wherein said electrode is further linked to one or more additional substrates, said second substrate and said one or more additional substrates forming a patterned array of substrates on the electrode, said patterned array of substrates comprising at least two regions that contain substrates that differ in structure.

Claim 49 (previously presented): The method of claim 46, wherein said composition comprises one or more additional substrates, said second substrate and said one or more additional substrates being patterned on an array of independent electrodes, at least two electrodes containing substrates that differ in structure.

Claim 50 (currently amended): A method of assaying a sample for an activity that modifies the rate of joining joins a first substrate with a second substrate to form a product comprising:

- (a) forming a composition comprising said sample, said first substrate and said second substrate, said first substrate being linked to a luminescent label and said second substrate being linked to a capture moiety;
- (b) incubating said composition under conditions wherein said activity can form said product at a differing rate in the presence or absence of said activity, wherein said product is linked to said luminescent label and said capture moiety and wherein said activity is not part of the product;
- (c) capturing said capture moiety on an electrode;
- (d) applying a voltage at said electrode so as to induce said luminescent label in said product to emit luminescence; and
- (e) measuring emitted luminescence so as to measure said activity.

Claim 51 (currently amended): The method of claim 45, 46₁ or 50, wherein said activity results in the formation of a covalent bond.

Claim 52 (currently amended): The method of claim 45, 46₁ or 50, wherein said first substrate or said second substrate comprises peptides.

Claim 53 (currently amended): The method of claim 45, 46₁ or 50, wherein said first substrate or said second substrate comprises nucleic acids.

Claim 54 (currently amended): The method of claim 45, 46₁ or 50, wherein said activity is the activity of a catalyst selected from the group consisting of nucleic acid

polymerases, nucleic acid ligases, integrases, ribosomes, ubiquitin-protein ligases and trans-glutaminases.

Claim 55 (currently amended): A method of assaying a sample for an activity that cleaves a substrate comprising:

- (a) forming a composition comprising said sample and said substrate;
- (b) incubating said composition under conditions wherein said activity can cleave said substrate;
- (c) immobilizing a luminescent label on an electrode, wherein said electrode is not a carbon electrode and wherein the luminescent label is linked to said substrate and said substrate is linked to said electrode, the immobilization being dependent on the presence of uncleaved substrate;
- (d) applying a voltage at said electrode so as to induce said immobilized luminescent label to emit luminescence; and
- (e) measuring emitted luminescence so as to measure said activity.

Claim 56 (currently amended): A method of assaying a sample for an activity that cleaves a substrate comprising:

- (a) forming a composition comprising said sample and said substrate, wherein said substrate is linked to a luminescent label and to an electrode, wherein said electrode is not a carbon electrode;
- (b) incubating said composition under conditions wherein said activity can cleave said substrate so as to cleave said luminescent label from said electrode;
- (c) applying a voltage at said electrode so as to induce said luminescent label in said substrate to emit luminescence; and

(d) measuring emitted luminescence so as to measure said activity.

Claim 57 (currently amended): The method of claim 56, wherein said substrate is linked to said electrode via a first binding reagent attached to said substrate that can specifically bind to a second binding reagent attached to said electrode an A:B-linkage.

Claim 58 (previously presented): The method of claim 56, wherein said electrode is further linked to one or more additional substrates, said substrate and said one or more additional substrates forming a patterned array of substrates on the electrode, said patterned array of substrates comprising at least two regions that contain substrates that differ in structure.

Claim 59 (previously presented): The method of claim 56, wherein said composition comprises one or more additional substrates, said substrate and said one or more additional substrates being patterned on an array of independent electrodes, at least two electrodes containing substrates that differ in structure.

Claim 60 (currently amended): A method of assaying a sample for an activity that cleaves a substrate comprising:

- (a) forming a composition comprising said sample and said substrate, wherein said substrate is linked to a luminescent label and to a capture moiety;
- (b) incubating said composition under conditions wherein said activity can cleave said substrate so as to cleave said luminescent label from said capture moiety;
- (c) capturing said capture moiety on an electrode wherein said electrode is not a carbon electrode;

(d) applying a voltage at said electrode so as to induce said luminescent label linked to said substrate to emit luminescence; and

(e) measuring emitted luminescence so as to measure said activity.

Claim 61 (currently amended): The method of claim 55, 56₁ or 60, wherein said activity results in the cleavage of a covalent bond.

Claim 62 (currently amended): The method of claim 55, 56₁ or 60, wherein said substrate comprises a peptide.

Claim 63 (currently amended): The method of claim 55, 56₁ or 60, wherein said substrate comprises a nucleic acid.

Claim 64 (currently amended): The method of claim 55, 56₁ or 60, wherein said activity is the activity of a catalyst selected from the group consisting of nucleases, proteases and glycosidases.

Claim 65 (currently amended): The method of claim 45, 46, or 50, ~~55, 56 or 60~~, wherein said electrode comprises elemental carbon.

Claim 66 (currently amended): The method of claim 45, 46, or 50, ~~55, 56 or 60~~, wherein said electrode comprises glassy carbon, carbon black, graphite, carbon fibers, carbon nanotubes or combinations thereof.

Claim 67 (currently amended): The method of claim 45, 46, 50, 55, 56₁ or 60, wherein said electrode comprises conductive particles dispersed within or on a polymeric material.

Claim 68 (currently amended): The method of claim 45, 46, 50, 55, 56₁ or 60, wherein said activity is an enzymatic activity.

Claim 69 (currently amended): The method of claim 45, 46, 50, 55, 56₁ or 60, wherein said composition further comprises an inhibitor of said activity and the measurement of said activity is correlated to the amount or inhibitory ability of said inhibitor.

Claims 70-76 (canceled).

Claim 77 (withdrawn): A kit for measuring the activity of an enzyme that joins a first substrate and a second substrate, the kit comprising the enzyme, a solid phase, the first substrate, the second substrate and an electrochemiluminescence label, wherein said solid phase comprises an electrode that is linked to said first substrate and said electrochemiluminescent label is linked to said second substrate.

Claim 78 (withdrawn): A kit for measuring the activity of an enzyme that cleaves a substrate, the kit comprising the enzyme, a solid phase, the substrate and an electrochemiluminescence label, wherein said solid phase comprises an electrode, said substrate is linked to said electrode and said electrochemiluminescence label and said enzyme cleaves said substrate so as to form a first product linked to said electrode and a second product linked to said electrochemiluminescence label.

Claim 79 (withdrawn): The kit of claim 77 or 78, wherein said electrode is further linked to one or more additional substrates, so as to form a patterned array of substrates on the electrode, said patterned array of substrates comprising at least two regions that contain substrates that differ in structure.

Claim 80 (withdrawn): The kit of claim 77 or 78, wherein said solid phase comprises an array of independent electrodes and said kit further comprises one or more additional substrates, linked to said array of independent electrodes so that at least two electrodes contain substrates that differ in structure.

Claim 81 (new): The method of claim 47, wherein the first and second binding reagents are selected from the group consisting of antibody-hapten pairs, hapten-antibody pairs, receptor-ligand pairs, ligand-receptor pairs, complementary nucleic acid pairs, metal-metal ligand pairs, metal ligand - metal pairs, avidin-biotin, biotin-avidin, biotin-streptavidin, and streptavidin-biotin.

Claim 82 (new): The method of claim 81, wherein the first and second binding reagents are selected from the group consisting of biotin-streptavidin and streptavidin-biotin.

Claim 83 (new): The method of claim 57, wherein the first and second binding reagents are selected from the group consisting of antibody-hapten pairs, hapten-antibody pairs, receptor-ligand pairs, ligand-receptor pairs, complementary nucleic acid pairs, metal-metal ligand pairs, metal ligand - metal pairs, avidin-biotin, biotin-avidin, biotin-streptavidin, and streptavidin-biotin.

Claim 84 (new): The method of claim 83, wherein the first and second binding reagents are selected from the group consisting of biotin-streptavidin and streptavidin-biotin.

Claim 85 (new): The method of claims 45, 46, 50, 55, 56, or 60, wherein said electrode comprises a metal.

Claim 86 (new): The method of claim 85, wherein said electrode comprises gold or platinum.

Claim 87 (new): The method of claim 45 or 46, wherein said activity that modifies the rate of joining is an enzyme.

Claim 88 (new): The method of claim 45 or 46, wherein said activity that modifies the rate of joining is an inhibitor.